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EXAMINER

ROE, JESSEE RANDALL

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/654,203	<b>Applicant(s)</b> RAKOWSKI, JAMES A.	
	<b>Examiner</b> Jessee Roe	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6,9-11,13,14,16,18 and 20-28 is/are pending in the application.
- 4a) Of the above claim(s) 6,14,23,24,27 and 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5,9-11,13,16,18,20-22,25 and 26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office Action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10 March 2009 has been entered.

### ***Status of the Claims***

Claims 1-6, 9-11, 13-14, 16, 18 and 20-28 are pending wherein claims 3-4 and 9 are amended, claims 7-8, 12, 15, 17, 19 and 29-98 are canceled, and claims 6, 14, 23-24 and 27-28 are withdrawn from consideration.

### ***Status of Previous Rejections***

The previous rejection of claim 25 under 35 U.S.C. 103(a) as being unpatentable over Szummer et al. (Hydrogen surface effects in ferritic stainless steels) in view of Ono (JP 10-280103) is withdrawn in view of the Applicant's arguments. The previous rejection of claim 25 under 35 U.S.C. 103(a) as being unpatentable over Szummer et al. (Hydrogen surface effects in ferritic stainless steels) in view of Linden et al. (WO 99/10554) is withdrawn in view of the Applicant's arguments. The previous rejection of claim 25 under 35 U.S.C. 103(a) as being unpatentable over Szummer et al. (Hydrogen

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surface effects in ferritic stainless steels) in view of Uematsu et al. (JP 06-172933) is withdrawn in view of the Applicant's arguments. The previous rejection of claim 25 under 35 U.S.C. 103(a) as being unpatentable over Szummer et al. (Hydrogen surface effects in ferritic stainless steels) in view of Matsui et al. (JP 09-209092) is withdrawn in view of the Applicant's arguments.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 11, 13, 16, 18, 20-22 and 25-26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In regards to claim 11, the specification does not contain support for the ferritic stainless steel being "uncoated" as claimed.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to the recitation "placing the at least one surface of the article in a bath containing an electropolishing solution and a cathode; and passing a current between the article..." of claim 25, the Examiner notes that claim 25 depends from claim 11 and it is unclear if "the article" referred to in claim 25 is the "ferritic stainless steel" of claim 11.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-5, 9-11, 13, 16, 18, 20-22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibashi (US 4,097,311).

In regards to claims 1 and 10-11 Ishibashi ('311) discloses electrolytically polishing (electropolishing) ferritic stainless steel articles (which would include uncoated ferritic stainless steel articles) used for a solar collector (col. 3, lines 28-53 and col. 7, lines 34-50). Ishibashi ('311) further discloses that the stainless steel composition would include 11 to 30 weight percent chromium (col. 3, lines 28-34) and 0.001 to 5 weight percent of at least one element selected from the group of nitrogen, copper, aluminum vanadium, yttrium, titanium, niobium, tantalum, uranium, tungsten, zirconium and HF (col. 4, lines 15-22). It would have been obvious to one of ordinary

skill in the art at the time the invention was made to have selected the claimed amounts of chromium, aluminum, and yttrium from the amounts disclosed by Ishibashi ('311) because Ishibashi ('311) discloses the same utility throughout the disclosed ranges.

With respect to the recitations "so that, when subjected to an oxidizing atmosphere at high temperature, the electropolished surface develops an electrically conductive, aluminum-rich, oxidation resistant oxide scale comprising chromium and iron and having a hematite structure differering from  $\text{Fe}_2\text{O}_3$ ,  $\alpha\text{-Cr}_2\text{O}_3$ , and  $\alpha\text{-Al}_2\text{O}_3$ " as recited in lines 9-13 of claim 1, "wherein lattice parameters differ from  $a_o$  and  $c_o$  of  $\text{Fe}_2\text{O}_3$ ,  $\alpha\text{-Cr}_2\text{O}_3$ , and  $\alpha\text{-Al}_2\text{O}_3$ " as recited in claim 2, and "wherein the oxide scale is characterized by lattice parameters  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å" of claim 5, Ishibashi ('311) discloses an  $(\text{FeCr})_2\text{O}_3$  oxide (col. 5, lines 14-19). Additionally, Ishibashi ('311) discloses processing substantially the same composition by the same process (electropolishing). Therefore, the claimed structure and lattice parameters would be expected. MPEP 2112.01 I.

With respect to the recitations "wherein the at least one electropolished surface develops the oxide scale when heated in an oxidizing atmosphere at a temperature in the range of 750°C to 850°C." of claim 3, "wherein the at least one electropolished surface develops the oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C." of claim 4 and "wherein the electropolished surface develops the oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C, and

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wherein the oxide scale is characterized by  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å" of claim 9, the Examiner notes that these recitations would not be an active step in the process as claimed and are therefore considered a property that would result from the electropolishing of a ferritic stainless steel. MPEP 2112.01 I.

With respect to the recitation "so that the electropolished surface develops an aluminum-rich oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C, the oxide scale comprising iron and chromium and having a hematite structure,  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å" of lines 9-13 of claim 10, the Examiner notes that this recitation would not be an active step in the process as claimed and is therefore considered a property that would be the result from the electropolishing of a ferritic stainless steel. MPEP 2112.01 I.

With respect to the recitation "wherein the at least one electropolished surface develops an aluminum-rich oxide scale comprising iron and chromium and having a hematite structure  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å, when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C." of claim 13, the Examiner notes that this recitation would not be an active step in the process as claimed and is therefore considered a property that would be the result from the electropolishing of a ferritic stainless steel. MPEP 2112.01 I.

In regards to claims 16 and 18, Ishibashi ('311) further discloses that the

stainless steel composition would include 0.001 to 5 weight percent of at least one element selected from the group of nitrogen, copper, aluminum vanadium, yttrium, titanium, niobium, tantalum, uranium, tungsten, zirconium and HF (col. 4, lines 15-22).

In regards to claims 20-22, Ishibashi ('311) discloses that the stainless steel composition would include 11 to 30 weight percent chromium (col. 3, lines 28-34) and 0.001 to 5 weight percent of at least one element selected from the group of nitrogen, copper, aluminum vanadium, yttrium, titanium, niobium, tantalum, uranium, tungsten, zirconium and HF (col. 4, lines 15-22).

With respect to the recitation "wherein electropolishing the at least one surface improves resistance of the at least one surface to oxidation when subjected to a temperature and an atmosphere characteristic of operating conditions within a solid oxide fuel cell" of claim 26, the Examiner notes Ishibashi ('311) discloses the same or a substantially similar composition and the same processing. Therefore, this property would be expected. MPEP 2112.01 I.

Claims 1-5, 9-11, 13, 16, 18, 20-22 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suda (JP 10-088391) in view of Ono (JP 10-280103).

In regards to claims 1, 10 and 11, Suda (JP '391) discloses electropolishing a ferritic stainless steel (which would include an uncoated ferritic stainless steel) comprising 12 to 25 weight percent chromium [0009] and [0019]. However, Suda (JP '391) does not specify that the ferritic stainless steel would comprise at least 0.2 weight



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percent aluminum and a total weight percent of rare earth metals from 0.02 to 1 weight percent.

Ono (JP '103) discloses, in the same field of endeavor, adding 0 to 1 weight percent aluminum and 0 to 0.2 weight percent rare earth metals to a ferritic stainless steel alloy, having a substantially similar amount of chromium as Suda (JP '391), to improve oxidation (corrosion) resistance [0017] and [0019].

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added 0 to 1 weight percent aluminum and 0 to 0.2 weight percent rare earth metals, as disclosed by Ono (JP '103), to the ferritic stainless steel, as disclosed by Suda (JP '391), in order to improve oxidation (corrosion) resistance, as disclosed by Ono (JP '103).

With respect to the recitations "so that, when subjected to an oxidizing atmosphere at high temperature, the electropolished surface develops an electrically conductive, aluminum-rich, oxidation resistant oxide scale comprising chromium and iron and having a hematite structure differing from  $\text{Fe}_2\text{O}_3$ ,  $\alpha\text{-Cr}_2\text{O}_3$ , and  $\alpha\text{-Al}_2\text{O}_3$ " as recited in lines 9-13 of claim 1, "wherein lattice parameters differ from  $a_o$  and  $c_o$  of  $\text{Fe}_2\text{O}_3$ ,  $\alpha\text{-Cr}_2\text{O}_3$ , and  $\alpha\text{-Al}_2\text{O}_3$ " as recited in claim 2, and "wherein the oxide scale is characterized by lattice parameters  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å" of claim 5, neither Suda (JP '391) nor Ono (JP '103) specify the hematite structure that would be formed. However, Suda (JP '391) in view of Ono (JP '103) does disclose the same or substantially the same composition in addition to the same process (electropolishing). Therefore, it would be expected that

Suda (JP '391) in view of Ono (JP '103) would have the hematite structure and the hematite lattice parameters as claimed in the instant invention. MPEP 2112.01 I.

With respect to the recitations "wherein the at least one electropolished surface develops the oxide scale when heated in an oxidizing atmosphere at a temperature in the range of 750°C to 850°C." of claim 3, "wherein the at least one electropolished surface develops the oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C." of claim 4 and "wherein the electropolished surface develops the oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C, and wherein the oxide scale is characterized by  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å" of claim 9, the Examiner notes that these recitations would not be an active step in the process as claimed and are therefore considered a property that would result from the electropolishing of a ferritic stainless steel. MPEP 2112.01 I.

With respect to the recitation "so that the electropolished surface develops an aluminum-rich oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C, the oxide scale comprising iron and chromium and having a hematite structure,  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å" of lines 9-13 of claim 10, the Examiner notes that this recitation would not be an active step in the process as claimed and is therefore considered a property that would be the result from the electropolishing of a ferritic

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stainless steel. MPEP 2112.01 I.

With respect to the recitation "wherein the at least one electropolished surface develops an aluminum-rich oxide scale comprising iron and chromium and having a hematite structure  $a_0$  in the range of 4.95 to 5.04 Å and  $c_0$  in the range of 13.58 to 13.75 Å, when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C." of claim 13, the Examiner notes that this recitation would not be an active step in the process as claimed and is therefore considered a property that would be the result from the electropolishing of a ferritic stainless steel. MPEP 2112.01 I.

In regards to claim 16, Ono (JP '103) discloses adding 0 to 1 weight percent aluminum [0019].

In regards to claim 18, Ono (JP '103) discloses yttrium and hafnium [0017].

In regards to claim 20, Suda (JP '391) discloses 12 to 25 weight percent chromium. Ono (JP '103) discloses 0 to 1 weight percent aluminum and 0 to 0.2 weight percent rare earth metals ([0013], [0017] and [0019]).

In regards to claim 21, Ono (JP '103) discloses 0 to 2 weight percent nickel, 0 to 1 weight percent manganese, 0 to 3 weight percent silicon, 0 to 0.2 weight percent carbon, 0 to 1 weight percent titanium, and does not specify the necessity of adding nitrogen which overlaps "in weight percent, up to 3 nickel, up to 3 manganese, up to 0.7 silicon, up to 0.07 nitrogen, up to 0.07 carbon and up to 0.5 titanium, as instantly claimed (claim 4 of Ono (JP '103)).

In regards to claim 22, Ono (JP '103) discloses 15 to 30 weight percent

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chromium, 0 to 1 weight percent aluminum and 0 to 0.2 weight percent rare earth metals, which includes cerium and lanthanum, which overlaps "in weight percent, about 22 chromium, about 0.6 aluminum, cerium and lanthanum, wherein the sum of the weights of cerium and lanthanum is up to about 0.10" ([0013], [0017] and [0019]).

In regards to claim 25, Suda (JP '391) discloses that the stainless steel alloy would be the anode; the cathode would not be limited; and the solution would be an alkaline aqueous solution (abstract and [0010]).

With respect to the recitation "wherein electropolishing the at least one surface improves resistance of the at least one surface to oxidation when subjected to a temperature and an atmosphere characteristic of operating conditions within a solid oxide fuel cell" of claim 26, the Examiner notes Suda (JP '391) in view of Ono (JP '103) discloses the same or a substantially similar composition and the same processing. Therefore, this property would be expected. MPEP 2112.01 I.

Claims 1-5, 9-11, 13, 16, 18, 20-22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Szummer et al. (Hydrogen surface effects in ferritic stainless steels) in view of Ono (JP 10-280103).

In regards to claims 1 and 10-11, Szummer et al. discloses a method for preparing ferritic stainless steels (which would include uncoated stainless steel ) containing 16 weight percent, 17 weight percent and 19.3 weight percent chromium comprising electropolishing the stainless steel (page 356, column 2).

Szummer et al. discloses a method of preparing ferritic stainless steels as described above, but Szummer et al. does not specify that the ferritic stainless steels

would comprise at least 0.2 weight percent aluminum and a total weight of rare earth metals from 0.02 to 1.0 weight percent.

Ono (JP '103) discloses, in the same field of endeavor, adding 0 to 1 weight percent aluminum and 0 to 0.2 weight percent rare earth metals to a ferritic stainless steel alloy, having the same amount of chromium as Szummer et al., to improve oxidation (corrosion) resistance [0017] and [0019].

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added 0 to 1 weight percent aluminum and 0 to 0.2 weight percent rare earth metals, as disclosed by Ono (JP '103), to the ferritic stainless steel, as disclosed by Szummer et al., in order to improve oxidation (corrosion) resistance, as disclosed by Ono (JP '103).

With respect to the recitations "so that, when subjected to an oxidizing atmosphere at high temperature, the electropolished surface develops an electrically conductive, aluminum-rich, oxidation resistant oxide scale comprising chromium and iron and having a hematite structure differering from  $\text{Fe}_2\text{O}_3$ ,  $\alpha\text{Cr}_2\text{O}_3$ , and  $\alpha\text{Al}_2\text{O}_3$ " as recited in lines 9-13 of claim 1, "wherein lattice parameters differ from  $a_o$  and  $c_o$  of  $\text{Fe}_2\text{O}_3$ ,  $\alpha\text{Cr}_2\text{O}_3$ , and  $\alpha\text{Al}_2\text{O}_3$ " as recited in claim 2, and "wherein the oxide scale is characterized by lattice parameters  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å" of claim 5, neither Szummer et al. nor Ono (JP '103) specify the hematite structure that would be formed. However, Szummer et al. in view of Ono (JP '103) does disclose the same or substantially the same composition in

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addition to the same process (electropolishing). Therefore, it would be expected that Szummer et al. in view of Ono (JP '103) would have the hematite structure and the hematite lattice parameters as claimed in the instant invention. MPEP 2112.01 I.

With respect to the recitations "wherein the at least one electropolished surface develops the oxide scale when heated in an oxidizing atmosphere at a temperature in the range of 750°C to 850°C." of claim 3, "wherein the at least one electropolished surface develops the oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C." of claim 4 and "wherein the electropolished surface develops the oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C, and wherein the oxide scale is characterized by  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å" of claim 9, the Examiner notes that these recitations would not be an active step in the process as claimed and are therefore considered a property that would result from the electropolishing of a ferritic stainless steel. MPEP 2112.01 I.

With respect to the recitation "so that the electropolished surface develops an aluminum-rich oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C, the oxide scale comprising iron and chromium and having a hematite structure,  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å" of lines 9-13 of claim 10, the Examiner notes that this recitation would not be an active step in the process as claimed and is therefore considered a property that would be the result from the electropolishing of a ferritic

stainless steel. MPEP 2112.01 I.

With respect to the recitation "wherein the at least one electropolished surface develops an aluminum-rich oxide scale comprising iron and chromium and having a hematite structure  $a_0$  in the range of 4.95 to 5.04 Å and  $c_0$  in the range of 13.58 to 13.75 Å, when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C." of claim 13, the Examiner notes that this recitation would not be an active step in the process as claimed and is therefore considered a property that would be the result from the electropolishing of a ferritic stainless steel. MPEP 2112.01 I.

In regards to claim 16, Ono (JP '103) discloses adding 0 to 1 weight percent aluminum [0019].

In regards to claim 18, Ono (JP '103) discloses yttrium and hafnium [0017].

In regards to claim 20, Szummer et al. discloses a method for preparing ferritic stainless steels containing 16 weight percent, 17 weight percent and 19.3 weight percent chromium (page 356, column 2). Ono (JP '103) discloses 15 to 30 weight percent chromium, 0 to 1 weight percent aluminum and 0 to 0.2 weight percent rare earth metals ([0013], [0017] and [0019]).

In regards to claim 21, Ono (JP '103) discloses 0 to 2 weight percent nickel, 0 to 1 weight percent manganese, 0 to 3 weight percent silicon, 0 to 0.2 weight percent carbon, 0 to 1 weight percent titanium, and does not specify the necessity of adding nitrogen which overlaps "in weight percent, up to 3 nickel, up to 3 manganese, up to 0.7 silicon, up to 0.07 nitrogen, up to 0.07 carbon and up to 0.5 titanium, as instantly

claimed (claim 4 of Ono (JP '103)).

In regards to claim 22, Ono (JP '103) discloses 15 to 30 weight percent chromium, 0 to 1 weight percent aluminum and 0 to 0.2 weight percent rare earth metals, which includes cerium and lanthanum, which overlaps "in weight percent, about 22 chromium, about 0.6 aluminum, cerium and lanthanum, wherein the sum of the weights of cerium and lanthanum is up to about 0.10" ([0013], [0017] and [0019]).

With respect to the recitation "wherein electropolishing the at least one surface improves resistance of the at least one surface to oxidation when subjected to a temperature and an atmosphere characteristic of operating conditions within a solid oxide fuel cell" of claim 26, the Examiner notes Szummer et al. in view of Ono (JP '103) discloses the same or a substantially similar composition and the same processing. Therefore, this property would be expected. MPEP 2112.01 I.

Claims 1-5, 9-11, 13, 18, 21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Szummer et al. (Hydrogen surface effects in ferritic stainless steels) in view of Linden et al. (WO 99/10554).

In regards to claims 1 and 10-11, Szummer et al. discloses a method for preparing ferritic stainless steels (which would include uncoated stainless steel ) containing 16 weight percent, 17 weight percent and 19.3 weight percent chromium comprising electropolishing the stainless steel (page 356, column 2).

Szummer et al. discloses a method of preparing ferritic stainless steels as described above, but Szummer et al. does not specify that the ferritic stainless steels



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would comprise at least 0.2 weight percent aluminum and a total weight of rare earth metals from 0.02 to 1.0 weight percent.

Linden et al. (WO '554) discloses ferritic stainless steels comprising 15 to 25 weight percent chromium wherein 3 to 7 weight percent aluminum would be added to form a protective oxide layer and 0 to 0.5 weight percent of cerium, lanthanum, yttrium, and hafnium would be added to improve adhesion of the oxide layer (abstract, page 3, lines 15-32, page 4, lines 17-32 and page 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add 3 to 7 weight percent aluminum and 0 to 0.5 weight percent of cerium, lanthanum, yttrium, and hafnium, as disclosed by Linden et al. (WO '554), to the ferritic stainless steel containing 16 weight percent, 17 weight percent and 19.3 weight percent chromium, as disclosed by Szummer et al., in order to form a protective oxide layer and improve adhesion of the oxide layer, as disclosed by Linden et al. (WO '554) (abstract, page 4, lines 17-32 and page 7).

With respect to the recitations "so that, when subjected to an oxidizing atmosphere at high temperature, the electropolished surface develops an electrically conductive, aluminum-rich, oxidation resistant oxide scale comprising chromium and iron and having a hematite structure differering from  $\text{Fe}_2\text{O}_3$ ,  $\alpha\text{-Cr}_2\text{O}_3$ , and  $\alpha\text{-Al}_2\text{O}_3$ " as recited in lines 9-13 of claim 1, "wherein lattice parameters differ from  $a_o$  and  $c_o$  of  $\text{Fe}_2\text{O}_3$ ,  $\alpha\text{-Cr}_2\text{O}_3$ , and  $\alpha\text{-Al}_2\text{O}_3$ " as recited in claim 2, and "wherein the oxide scale is characterized by lattice parameters  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å" of claim 5, neither Szummer et al. nor Linden et

al. (WO '554) specify the hematite structure that would be formed. However, Szummer et al. in view of Linden et al. (WO '554) does disclose the same or substantially the same composition in addition to the same process (electropolishing). Therefore, it would be expected that Szummer et al. in view of Linden et al. (WO '554) would have the hematite structure and the hematite lattice parameters as claimed in the instant invention. MPEP 2112.01 I.

With respect to the recitations "wherein the at least one electropolished surface develops the oxide scale when heated in an oxidizing atmosphere at a temperature in the range of 750°C to 850°C." of claim 3, "wherein the at least one electropolished surface develops the oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C." of claim 4 and "wherein the electropolished surface develops the oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C, and wherein the oxide scale is characterized by  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å" of claim 9, the Examiner notes that these recitations would not be an active step in the process as claimed and are therefore considered a property that would result from the electropolishing of a ferritic stainless steel. MPEP 2112.01 I.

With respect to the recitation "so that the electropolished surface develops an aluminum-rich oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C, the oxide scale comprising iron and chromium and having a hematite structure,  $a_o$  in the range of 4.95 to 5.04 Å and

$c_o$  in the range of 13.58 to 13.75 Å" of lines 9-13 of claim 10, the Examiner notes that this recitation would not be an active step in the process as claimed and is therefore considered a property that would be the result from the electropolishing of a ferritic stainless steel. MPEP 2112.01 I.

With respect to the recitation "wherein the at least one electropolished surface develops an aluminum-rich oxide scale comprising iron and chromium and having a hematite structure  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å, when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C." of claim 13, the Examiner notes that this recitation would not be an active step in the process as claimed and is therefore considered a property that would be the result from the electropolishing of a ferritic stainless steel. MPEP 2112.01 I.

In regards to claim 18, Linden et al. (WO '554) 0 to 0.5 weight percent of cerium, lanthanum, yttrium, and hafnium (abstract and page 7).

In regards to claim 21, Linden et al. (WO '554) discloses less than 2 weight percent nickel, less than 2 weight percent manganese, less than 2 weight percent silicon, less than 0.05 weight percent carbon, 0.005 to 0.03 weight percent titanium, and less than 0.05 weight percent nitrogen which overlaps "in weight percent, up to 3 nickel, up to 3 manganese, up to 0.7 silicon, up to 0.07 nitrogen, up to 0.07 carbon and up to 0.5 titanium, as instantly claimed (page 3, lines 15-32).

With respect to the recitation "wherein electropolishing the at least one surface improves resistance of the at least one surface to oxidation when subjected to a

temperature and an atmosphere characteristic of operating conditions within a solid oxide fuel cell” of claim 26, the Examiner notes Szummer et al. in view of Linden et al. (WO '554) discloses the same or a substantially similar composition and the same processing. Therefore, this property would be expected. MPEP 2112.01 I.

Claims 1-5, 9-11, 13, 16, 18, 21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Szummer et al. (Hydrogen surface effects in ferritic stainless steels) in view of Uematsu et al. (JP 06-172933).

In regards to claims 1 and 10-11, Szummer et al. discloses a method for preparing ferritic stainless steels (which would include uncoated stainless steel ) containing 16 weight percent, 17 weight percent and 19.3 weight percent chromium comprising electropolishing the stainless steel (page 356, column 2).

Szummer et al. discloses a method of preparing ferritic stainless steels as described above, but Szummer et al. does not specify that the ferritic stainless steels would comprise at least 0.2 weight percent aluminum and a total weight of rare earth metals from 0.02 to 1.0 weight percent.

Uematsu et al. (JP '933) discloses adding 1 to 4.5 weight percent aluminum, to maintain high temperature oxidation resistance, and 0.01 to 0.15 weight percent rare earth metals such as cerium, lanthanum, and yttrium, to improve adhesion of the oxide film, for a ferritic stainless steel having 15 to 25 weight percent chromium ([0012-0013] and [0015-0016]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added 1 to 4.5 weight percent aluminum and 0.01 to 0.15 weight percent rare earth metals such as cerium, lanthanum, and yttrium, as disclosed by Uematsu et al. (JP '933), to the ferritic stainless steels, as disclosed by Szummer et al., in order to maintain high temperature oxidation resistance and improve adhesion of the oxide film, as disclosed by Uematsu et al. (JP '933) (abstract, [0012-0013] and [0015-0016]).

With respect to the recitations "so that, when subjected to an oxidizing atmosphere at high temperature, the electropolished surface develops an electrically conductive, aluminum-rich, oxidation resistant oxide scale comprising chromium and iron and having a hematite structure differering from  $\text{Fe}_2\text{O}_3$ ,  $\alpha\text{-Cr}_2\text{O}_3$ , and  $\alpha\text{-Al}_2\text{O}_3$ " as recited in lines 9-13 of claim 1, "wherein lattice parameters differ from  $a_o$  and  $c_o$  of  $\text{Fe}_2\text{O}_3$ ,  $\alpha\text{-Cr}_2\text{O}_3$ , and  $\alpha\text{-Al}_2\text{O}_3$ " as recited in claim 2, and "wherein the oxide scale is characterized by lattice parameters  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å" of claim 5, neither Szummer et al. nor Uematsu et al. (JP '933) specify the hematite structure that would be formed. However, Szummer et al. in view of Uematsu et al. (JP '933) does disclose the same or substantially the same composition in addition to the same process (electropolishing). Therefore, it would be expected that Szummer et al. in view of Uematsu et al. (JP '933) would have the hematite structure and the hematite lattice parameters as claimed in the instant invention. MPEP 2112.01 I.

With respect to the recitations "wherein the at least one electropolished surface develops the oxide scale when heated in an oxidizing atmosphere at a temperature in the range of 750°C to 850°C." of claim 3, "wherein the at least one electropolished surface develops the oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C." of claim 4 and "wherein the electropolished surface develops the oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C, and wherein the oxide scale is characterized by  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å" of claim 9, the Examiner notes that these recitations would not be an active step in the process as claimed and is therefore considered a property that would result from the electropolishing of a ferritic stainless steel. MPEP 2112.01 I.

With respect to the recitation "so that the electropolished surface develops an aluminum-rich oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C, the oxide scale comprising iron and chromium and having a hematite structure,  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å" of lines 9-13 of claim 10, the Examiner notes that this recitation would not be an active step in the process as claimed and is therefore considered a property that would be the result from the electropolishing of a ferritic stainless steel. MPEP 2112.01 I.

With respect to the recitation "wherein the at least one electropolished surface develops an aluminum-rich oxide scale comprising iron and chromium and having a

hematite structure  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å, when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C." of claim 13, the Examiner notes that this recitation would not be an active step in the process as claimed and is therefore considered a property that would be the result from the electropolishing of a ferritic stainless steel. MPEP 2112.01 I.

In regards to claim 16, Uematsu et al. (JP '933) discloses adding 1 to 4.5 weight percent aluminum [0013].

In regards to claim 18, Uematsu et al. (JP '933) discloses 0.01 to 0.15 weight percent rare earth metals such as cerium, lanthanum, and yttrium [0015-0016].

In regards to claim 21, Uematsu et al. (JP '933) discloses 0 to 0.03 weight percent nitrogen, 0 to 0.3 weight percent manganese, 0 to 0.2 weight percent silicon, 0 to 0.03 weight percent carbon, 0.01 to 0.5 weight percent titanium, and does not specify the necessity of adding nickel which overlaps "in weight percent, up to 3 nickel, up to 3 manganese, up to 0.7 silicon, up to 0.07 nitrogen, up to 0.07 carbon and up to 0.5 titanium, as instantly claimed (abstract).

With respect to the recitation "wherein electropolishing the at least one surface improves resistance of the at least one surface to oxidation when subjected to a temperature and an atmosphere characteristic of operating conditions within a solid oxide fuel cell" of claim 26, the Examiner notes Szummer et al. in view of Uematsu et al. (JP '933) discloses the same or a substantially similar composition and the same processing. Therefore, this property would be expected. MPEP 2112.01 I.

Claims 1-5, 9-11, 13, 16, 18, 20-22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Szummer et al. (Hydrogen surface effects in ferritic stainless steels) in view of Matsui et al. (JP 09-209092).

In regards to claims 1 and 10-11, Szummer et al. discloses a method for preparing ferritic stainless steels (which would include uncoated stainless steel ) containing 16 weight percent, 17 weight percent and 19.3 weight percent chromium comprising electropolishing the stainless steel (page 356, column 2).

Szummer et al. discloses a method of preparing ferritic stainless steels as described above, but Szummer et al. does not specify that the ferritic stainless steels would comprise at least 0.2 weight percent aluminum and a total weight of rare earth metals from 0.02 to 1.0 weight percent.

Matsui et al. (JP '092) discloses adding 0.01 to 2 weight percent aluminum, in order to improve high temperature oxidation (corrosion) resistance, and 0.001 to 0.05 of rare earth metals such as yttrium, in order to improve the oxide film, to stainless steel having 20 to 80 volume percent ferritic phase (ferritic stainless steel) and 15 to 27 weight percent chromium (abstract and [0018]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added 0.01 to 2 weight percent aluminum and 0.001 to 0.05 weight percent rare earth metals such as yttrium, as disclosed by Matsui et al. (JP '092), to the ferritic stainless steels, as disclosed by Szummer et al., in order to maintain high temperature oxidation resistance and improve adhesion of the oxide



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film, as disclosed by Matsui et al. (JP '092) (abstract and [0018]).

With respect to the recitations "so that, when subjected to an oxidizing atmosphere at high temperature, the electropolished surface develops an electrically conductive, aluminum-rich, oxidation resistant oxide scale comprising chromium and iron and having a hematite structure differering from  $\text{Fe}_2\text{O}_3$ ,  $\alpha\text{Cr}_2\text{O}_3$ , and  $\alpha\text{Al}_2\text{O}_3$ " as recited in lines 9-13 of claim 1, "wherein lattice parameters differ from  $a_o$  and  $c_o$  of  $\text{Fe}_2\text{O}_3$ ,  $\alpha\text{Cr}_2\text{O}_3$ , and  $\alpha\text{Al}_2\text{O}_3$ " as recited in claim 2, and "wherein the oxide scale is characterized by lattice parameters  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å" of claim 5, neither Szummer et al. nor Matsui et al. (JP '092) specify the hematite structure that would be formed. However, Szummer et al. in view of Matsui et al. (JP '092) does disclose the same or substantially the same composition in addition to the same process (electropolishing). Therefore, it would be expected that Szummer et al. in view of Matsui et al. (JP '092) would have the hematite structure and the hematite lattice parameters as claimed in the instant invention. MPEP 2112.01 I.

With respect to the recitations "wherein the at least one modified surface develops the oxide scale when heated in an oxidizing atmosphere at a temperature in the range of 750°C to 850°C." of claim 3, "wherein the at least one modified surface develops the oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C." of claim 4 and "wherein the modified surface develops the oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C, and wherein the oxide scale

is characterized by  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å" of claim 9, the Examiner notes that these recitations would not be an active step in the process as claimed and is therefore considered a property that would result from the electropolishing of a ferritic stainless steel. MPEP 2112.01 I.

With respect to the recitation "so that the electropolished surface develops an aluminum-rich oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C, the oxide scale comprising iron and chromium and having a hematite structure,  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å" of lines 9-13 of claim 10, the Examiner notes that this recitation would not be an active step in the process as claimed and is therefore considered a property that would be the result from the electropolishing of a ferritic stainless steel. MPEP 2112.01 I.

With respect to the recitation "wherein the at least one electropolished surface develops an aluminum-rich oxide scale comprising iron and chromium and having a hematite structure  $a_o$  in the range of 4.95 to 5.04 Å and  $c_o$  in the range of 13.58 to 13.75 Å, when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C." of claim 13, the Examiner notes that this recitation would not be an active step in the process as claimed and is therefore considered a property that would be the result from the electropolishing of a ferritic stainless steel. MPEP 2112.01 I.

In regards to claim 16, Matsui et al. (JP '092) discloses adding 0.01 to 2 weight

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percent aluminum [0018].

In regards to claim 18, Matsui et al. (JP '092) discloses adding 0.001 to 0.05 of rare earth metals such as yttrium (abstract and [0018]).

In regards to claim 20, Szummer et al. discloses a method for preparing ferritic stainless steels containing 16 weight percent, 17 weight percent and 19.3 weight percent chromium (page 356, column 2). Matsui et al. (JP '092) discloses 15 to 27 weight percent chromium, 0.01 to 2 weight percent aluminum and 0.001 to 0.05 of rare earth metals such as yttrium, which overlaps "in weight percent, 18 up to 22 chromium, 0.4 to 0.8 aluminum and 0.02 to 0.2 REM" as instantly claimed (abstract and [0018]).

In regards to claim 21, Matsui et al. (JP '092) discloses 0.01 to 0.15 weight percent nitrogen, 0.1 to 2 weight percent manganese, 0.1 to 2 weight percent silicon, 0.06 to 0.2 weight percent carbon, 0.01 to 2 weight percent titanium, and 1 to 8 weight percent nickel which overlaps "in weight percent, up to 3 nickel, up to 3 manganese, up to 0.7 silicon, up to 0.07 nitrogen, up to 0.07 carbon and up to 0.5 titanium, as instantly claimed (abstract).

In regards to claim 22, Matsui et al. (JP '092) discloses 15 to 27 weight percent chromium, 0.01 to 2 weight percent aluminum and 0.001 to 0.05 weight percent rare earth metals, which includes cerium and lanthanum, which overlaps "in weight percent, about 22 chromium, about 0.6 aluminum, cerium and lanthanum, wherein the sum of the weights of cerium and lanthanum is up to about 0.10" ([0013], [0017] and [0019]).

With respect to the recitation "wherein electropolishing the at least one surface

improves resistance of the at least one surface to oxidation when subjected to a temperature and an atmosphere characteristic of operating conditions within a solid oxide fuel cell” of claim 26, the Examiner notes Szummer et al. in view of Matsui et al. (JP ‘092) discloses the same or a substantially similar composition and the same processing. Therefore, this property would be expected. MPEP 2112.01 I.

### ***Response to Arguments***

Applicant's arguments filed 10 March 2009 have been fully considered but they are not persuasive.

First, the Applicant primarily argues that the Examiner has mischaracterized the reference of Szummer et al. because Szummer et al. mentions, almost in passing, that preparing ferritic stainless steels for microscopic analyses involved a step of electropolishing and it is well known to prepare metallic samples for microscopic examination.

In response, the Szummer et al. discloses electropolishing a ferritic stainless steel (page 356, column 2). Therefore, an oxidation resistant surface would be expected.

Second, the Applicant primarily argues that while Ono (JP ‘103) may disclose a stainless steel alloy comprising ranges of chromium, aluminum and rare earth metals that overlap with the compositions recited in independent claims 1, 10 and 11 of the Subject Application, Szummer et al. merely discloses that electropolishing can be used for metallographic sample preparation of ferritic stainless steels for microscopic analysis

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and applicant believes that it has never been taught or suggested that electropolishing may be used to form a surface on a ferritic stainless steel that is resistant to oxidation at high temperatures.

In response, once a *prima facie* case is established, the burden shifts to the applicant to come forward with arguments and/or evidence to rebut the *prima facie* case. Applicant has failed to provide evidence that the electropolished ferritic stainless steel disclosed by Szummer et al. would not have an oxidation resistant surface.

Third, the Applicant primarily argues that there is absolutely no teaching, suggestion, or motivation in the cited art to use electrolytic polishing to improve high temperature oxidation resistance of ferritic stainless steels having the composition recited in claims 1, 10 and 11.

In response, the Examiner notes that the pending claims do not recite improving the high temperature oxidation resistance and do not reference what this improvement would be relative to.

Fourth, the Applicant primarily argues that the Examiner has provided no explicit rationale in the Office Action as to why one of ordinary skill in the art, when considering Szummer et al. in view of Ono (JP '103) would be motivated to electropolish a ferritic stainless steel for any other reason than metallographic sample preparation, much less than for making an oxidation resistant surface on the ferritic stainless steel. The Applicant further argues that the gap between the teachings in the cited reference and the subject matter recited in independent claims 1, 10 and 11 is "so great as to render the [claims] nonobvious to one reasonably skilled in the art".

In response to applicant's argument that no explicit rationale has been provided as to why one of ordinary skill in the art would be motivated to electropolish a ferritic stainless steel for any other reason than metallographic sample preparation, an oxidation resistance surface is a result that would be expected from electropolishing a ferritic stainless steel which is taught by the prior art. MPEP 2112.01 I.

Fifth, the Applicant primarily argues that the Examiner has not established a *prima facie* case of obviousness for at least the reason that he has not identified a rational basis why one of ordinary skill in the art at the time the invention was made would have electropolished or otherwise electrochemically modified the steel of Ono (other than for metallographic sample preparation).

In response, an oxidation resistant surface would be expected from an electropolished ferritic stainless steel because Szummer et al. in view of Ono (JP '103) discloses the substantially the same composition processed in the same manner. MPEP 2112.01 I.

Sixth, the Applicant primarily argues that the only possible apparent reason given in the Office Action for combining Szummer et al. and Ono (JP '103) is that they are "in the same field of endeavor" as that of the Subject Application; the field of endeavor of Szummer et al. is to study hydrogen embrittlement of ferritic stainless steels; this field of endeavor is not even reasonably pertinent to that of the Subject Application, which is to develop a method to make a surface that is resistant to high temperature oxidation; and a person looking at the effects of an oxygenated environment (an oxidizing

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environment) on a ferritic steel at high temperatures would not look to a publication that examines the effects of a hydrogenated environment on a ferritic steel.

In response, both Szummer et al. and Ono (JP '103) contain ferritic stainless steel subject matter and are therefore in the same field of endeavor and the claims do not actively recite subjecting the ferritic stainless steel to an oxidizing atmosphere.

Seventh, the Applicant primarily argues that the Office Action of 10 September 2008 provides no evidence that the hematite structure and oxide surface lattice parameter features recited in the claims were known to be present when the claimed invention was made; the Examiner admits that these features are not specified in Szummer et al. and Ono (JP '103); and since electropolishing was primarily used for metallographic sample preparation for microscopy, it is unlikely that any person of ordinary skill in the art would have had any reason to measure the lattice parameters of an oxide scale on an electropolished ferritic steel after exposing the electropolished surface to a high-temperature oxidizing atmosphere. Therefore the rejections are improper.

In response, the Examiner notes that the claims do not actively recite the step of subjecting the ferritic stainless steel to an oxidizing atmosphere and the hematite structure and oxide surface lattice parameter are merely a result of the step of electropolishing a ferritic stainless steel having a particular composition, which is suggested in the prior art.

Eighth, the Applicant makes similar arguments as set forth above with respect to Szummer et al. in view of Linden et al. (WO '554), Szummer et al. in view of Uematsu et

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al. (JP '933), and Szummer et al. in view of Matsui et al. (JP '092). The Examiner has addressed arguments with respect to the primary reference Szummer et al. and because the references to Ono (JP '103), Linden et al. (WO '554), Uematsu et al. (JP '933), Matsui et al. (JP '092) are secondary references that address the obvious combination of adding particular amounts aluminum and rare earth metals to the ferritic stainless of Szummer et al., the Applicant's primary arguments have been addressed.

Ninth, the Applicant primarily argues that compelling evidence of unexpected results is included in the Subject Application and was confirmed by the Brady Declaration. The Applicant further argues that the Examiner has no basis for discounting or rebutting Dr. Brady's statements.

In response, the Specification of the instant invention contains numerous plots and it is unclear what evidence the Applicant is referring to as being "unexpected". Unexpected results must be commensurate in scope with the claimed invention. MPEP 716.02(d).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessee Roe whose telephone number is (571)272-5938. The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:00 AM - 4:00 PM.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art  
Unit 1793

/JR/